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(54) Title: METHOD AND APPARATUS FOR ON-LINE CHATTING

(57) Abstract: Visitation by a first on-line user to an information page of an information site is facilitated. Dynamic formation of a chat session for the first on-line user and a second on-line user to chat with each other is also facilitated. The chat session, through which the first and second on-line users chat with each other, is then facilitated. In one embodiment, the chat session including its dynamic formation are facilitated by the information site. In another embodiment, the chat session including its dynamic formation are facilitated by a third party chat server. In one embodiment, the second on-line user is also visiting the same information page. In another embodiment, the second on-line user is merely visiting the same information site. In yet another embodiment, the second on-line user is visiting another information site. In one embodiment, visit by the first on-line user to a new information page of another information site, during the chat session, is also facilitated. In another embodiment, coordinated visit by the second on-line user to the same new information page of the other information site, during the chat session, is also facilitated.

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## **Method and Apparatus For On-Line Chatting**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention**

The present invention relates to the field of information systems. More specifically, the present invention relates to on-line chatting.

#### **2. Background Information**

Advances in computer technology have led to personalization of computers. Once reserved for large enterprises, computers have become affordable and available to the masses. Coupled that with advances in networking and telecommunication technologies, increasingly computers are being networked together. Companies are racing to put their businesses on public data networks, such as the Internet. Other non-profit and government entities are doing the same. Information has become readily available with a few mouse clicks. As a result, increasingly users go on-line to get their news, do their shopping, meet their friends or simply other users on-line.

Currently, under the prior art, a user can go to a pre-established on-line chat room (hereinafter, simply chat room), and chat with other users (acquainted or not). The chat rooms are typically organized by subject matters, such as movies, TV shows, health, family, social and political issues. These subject matter oriented chat rooms are hosted by an interest group, such as the video game players interest group, the romance book readers interest group, and so forth, or hosted by one of the portals, such as Yahoo and MSNBC. In addition to the pre-establishment and subject matter organization characteristics, prior art chat rooms also typically share a number of other common characteristics, the requirements of pre-registration and log-in, and scheduled chat times.

While prior art on-line chatting have provided users with a new venue for communicating and interacting with other users, the above discussed and other characteristics are confining. In the real world, people strike up conversation and chat with each other as they shop at their favorite department or "specialty"

stores (video stores, music stores and so forth), or frequent their favorite establishments (coffee shops, restaurants, bars, art galleries, and so forth). While each store or establishment tends to draw patrons of particular demographics or interests, nevertheless, in each of these situations, people talk or chat about whatever topics that interest them at the moment. There is no need to pre-register to get a user-ID, set up a password, fill out a profile, log into a chat room at a scheduled time, and out of courtesy, fundamentally constrain one's conversation to expressions substantially related to the theme of the particular chat room.

Thus, a need exists to provide on-line users with enhanced chatting experience that is more closely related to their real world experience.

#### SUMMARY OF THE INVENTION

Visitation by a first on-line user to an information page of an information site is facilitated. Dynamic formation of a chat session for the first on-line user and a second on-line user to chat with each other is also facilitated. The chat session, through which the first and second on-line users chat with each other, is then facilitated. In one embodiment, the chat session including its dynamic formation are facilitated by the information site. In another embodiment, the chat session including its dynamic formation are facilitated by a third party chat server. In one embodiment, the second on-line user is also visiting the same information page. In another embodiment, the second on-line user is merely visiting the same information site. In yet another embodiment, the second on-line user is visiting another information site. In one embodiment, visit by the first on-line user to a new information page of another information site, during the chat session, is also facilitated. In another embodiment, coordinated visit by the second on-line user to the same new information page of the other information site, during the chat session, is also facilitated.

#### BRIEF DESCRIPTION OF DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

**Figure 1** illustrates an overview of the present invention, in accordance with one embodiment;

**Figure 2** illustrates a method of the present invention in accordance with one embodiment;

**Figure 3** illustrates the dynamic formation operation in further detail icon in accordance with one embodiment;

**Figure 4** illustrates a software view of an information site, in accordance with one embodiment;

**Figures 5a-5b** illustrate the operational flow of the "initiate" script/applet, and its associated end-user interface, in accordance with one embodiment;

**Figures 6a-6b** illustrate the operational flow of the "describe" script/applet, and its associated end-user interface, in accordance with one embodiment;

**Figure 7** illustrates the operational flow of the "monitor/report" script/applet, in accordance with one embodiment;

**Figures 8a-8b** illustrate the operational flow of current visitor manager and the current visitor list in accordance with one embodiment;

**Figures 9a-9b** illustrate the operational flow of chat session manager and the end user interface of a chat session in accordance with one embodiment; and

**Figure 10** illustrate an overview of the present invention, in accordance with another embodiment.

#### DETAILED DESCRIPTION OF THE INVENTION

In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present invention may be practiced with only some or all aspects of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the

present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention.

Parts of the description will be presented using terms such as scripts, applet, end-user interfaces, icons, and so forth, commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. Parts of the description will be presented in terms of operations performed by a computer system, using terms such as registering, notifying, sending, and so forth. As well understood by those skilled in the art, these quantities and operations take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through mechanical and electrical components of a digital system; and the term digital system include general purpose as well as special purpose data processing machines, systems, and the like, that are standalone, adjunct or embedded.

Various operations will be described as multiple discrete steps performed in turn in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent, in particular, the order the steps are presented. Furthermore, the phrase "in one embodiment" will be used repeatedly, however the phrase does not necessarily refer to the same embodiment, although it may.

Referring now to **Figure 1**, wherein a block diagram illustrating an overview of the present invention in accordance with one embodiment is shown. As illustrated, client computers **102**, **104** and **106**, and information site **100** are coupled to one another through network **108**. Users **112**, **114** and **116** using client computers **102**, **104** and **106** visit information site **100**, and peruse information pages **118**, through network **108**. In accordance with the present invention, information site **100** is equipped to enable a chat session to be dynamically formed on-demand between all or a subset of users **102**, **104** and **106**, through which they chat with each other. In accordance with the presently preferred embodiment, pre-registration by users **112**, **114** and **116** with

information site **100** as well as logging-in are unnecessary. Users **112**, **114** and **116** are just any ordinary users visiting information site **100**. As a result, the chatting experience of users **112**, **114** and **116** is improved, as it more resembles what the users experience in real life. As will be readily apparent from the description to follow, while for ease of understanding, only users **112**, **114** and **116** are illustrated, the present invention may be practiced with any number of users, limited only by the processing capacity and bandwidth of information site **100** and network **108**.

Still referring to **Fig. 1**, network **108** is intended to represent a broad range of public and private data networks constituted with hubs, routers, switches, gateways and the like, known in the art. Suitable networking equipment (i.e. hubs, routers, and so forth) includes but not limited to those available from CISCO Systems and 3COM, both of San Jose, CA. In one embodiment, network **108** is the well known Internet.

Similarly, except for the teachings of the present invention incorporated, information site **100** is intended to represent a broad range of data sources, business, education, entertainment and the like, constituted with a single or cluster of shared or dedicated computer servers. Suitable computer servers include but not limited to those available from IBM of Armonk, NY, and Sun Microsystems of Mountain View, CA. Information pages **118** are intended to represent a broad range of textual and multi-media data embodied in any number of known organizational formats. In one embodiment, information site **100** is a web site, and information pages **118** are web pages.

Likewise, client computers **102**, **104** and **106** are intended to represent a broad range of computers known in the art, of any one of a number of form factors, desktop, laptop, hand-held and the like, equipped with the proper communication or networking equipment, as well as operating systems and other software. Suitable client computers include but not limited to those available from Dell Computer of Austin, Texas, and Apple Computers of Cupertino, CA. Communication/networking equipment includes but not limited to modems, ISDN, DSL as well as LAN adapters, available from 3Com and the like. Operating systems may be but not limited to the different variants of the Window® family of operating systems available from Microsoft of Redmond,

WA, Linux available from Red Hat of Durham, NC, and OS/7 available from Apple Computer. Other software includes in particular a browser. Examples of suitable browsers include Internet Explorer and Navigator available from Microsoft and Netscape Communication of Mountain View, CA respectively.

**Figure 2** illustrates a method of operation of the present invention, in accordance with one embodiment. As illustrated, at **202**, visitations by users/client computers **102/112**, **104/114**, and **106/116** are facilitated by information site **100**. In one embodiment, the facilitation is accomplished through intermittent connections made using a communication protocol. An example of such intermittent connections is a connection made in accordance with the hypertext transfer protocol (http), employing TCP/IP as the underlying communication protocol. At **204**, while users/client computers **102/112**, **104/114**, and **106/116** are visiting information site **100**, dynamic formation of a chat session between users **102-106**, or a subset, is facilitated on demand by information site **100**. At **206**, upon formation of the chat session, chatting between users/client computers **102/112**, **104/114**, and **106/116** are facilitated by information site **100**.

**Figure 3** illustrates the operation of dynamically forming a chat session on demand in further detail, in accordance with one embodiment. For the illustrated embodiment, it is assumed that users/client computers **102/112**, **104/114**, and **106/116** are all enabled to initiate the dynamic formation of the chat session. Furthermore, users/client computers **102/112**, **104/114**, and **106/116** are enabled to describe the visiting users as well as himself/herself, when initiating the dynamic formation of the chat session. Moreover, information site **100** is equipped to know and poll all its current visitors. In alternate embodiments, the present invention may be practiced without all users/client computers **102/112**, **104/114**, and **106/116** having the ability to initiate such dynamic formation of a chat session, e.g. certain "premier" users may be permitted to do so. The premier status may be "awarded" or given in any one of a number of application dependent manner. Likewise, in alternate embodiments, the present invention may be practiced without the initiating

user/client computer having the ability to describe the other visiting users of interest, nor himself/herself, as well as without information site 100 having the ability to know and poll all current visitors.

At 302, one of visiting users initiates the dynamic formation of a chat session, by expressing his/her desire to chat with other visiting users. At 304, the initiating user describes the visiting users of interest to him/her, as well as how he/she wants to be presented to the other visiting users. At 306, the desire, including the various descriptions are sent from the initiating user's client computer to information site 100. At 308, information site 100 polls the other visiting users, informing them of the initiating user, and his/her interest to chat. In one embodiment, the polling includes visiting users who are already engaged in an earlier dynamically formed chat session. At 310, an interested one of the other visiting users responds to the polling, consenting to participate in such a chat session. In one embodiment, the responding user may be someone who's already participating in an earlier dynamically formed chat session. At 312, if no other visiting user consents to chat with the initiating user, the user is so informed. At 314, if at least some of the consenting users are already participating in an earlier dynamically formed chat session, the initiating user as well as the "non-participating" consenting users are added to an appropriate one of the earlier formed chat sessions. In one embodiment, the appropriate one of the earlier formed chat sessions is identified by prompting the initiating user, i.e. asking the initiating user to choose. In alternate embodiments, a tie breaking scheme, e.g. by weight and so forth, may be employed to automatically decide which earlier formed chat session is the appropriate chat session if chat participants of more than one chat session gave their consents. In yet other embodiments, all consenting users may be prompted for permission to merge their chat sessions to a single chat session, prior to adding the initiating user. At 316, if all consenting users are new chat participants, information site 100 allocates the appropriate resources (such as memory space and so forth), dynamically establishing the chat session for the initiating user and all other consenting users to chat with each other. In one embodiment, the resources required to facilitate chat session are pre-reserved.



**Figure 4** illustrates a software view of information site **100** in further detail in accordance with one embodiment. As illustrated, in addition to information pages **118**, information site **100** includes operating system **402** and information server **404**. Furthermore, information site **100** includes scripts/applets **406** associated with information pages **118**, current visitor manager **408**, current visitor list **410**, chat session manager **412** and chat sessions **414**.

Operating system **402** performs its conventional function of managing the hardware resource of information site **100**. Operating system **402** includes in particular appropriate communication services for supporting network communication with client computers **112**, **114** and **116**. Examples of operating system **402** includes Window® NT available from Microsoft, or Solaris available from Sun Microsystems. Information server **404** performs its conventional function of responding to visiting users, and providing the visiting users with requested ones of information pages **118** (including applicable ones of associated scripts/applets **406**). Examples of information server **404** includes Internet Information Server available from Microsoft, or Border Manager available from Novell of American Fork, Utah.

For the illustrated embodiment, scripts/applets **406** include in particular an "initiate", a "describe", and a "monitor/report" script/applet. The "initiate" script/applet is employed to provide a mechanism for a visiting user to indicate his/her desire to a chat session with selected ones of other visiting users. In a presently preferred embodiment, the "initiate" script/applet inserts a user selectable icon in the requested information page, and is provided to the user as an integral part of providing the responding information page. Moreover, for the embodiment, the user selectable icon has different manifestations corresponding to different visitation traffic levels at information site **100**. In a presently preferred embodiment, a representative one of the manifestations is included with the "initiate" script/applet when it is provided to the user. In alternate embodiments, the "initiate" script/applet may further poll information site **100** periodically, to ensure the included manifestation remains representative, otherwise obtains a more representative manifestation. In yet other embodiments, other mechanisms for the user to indicate his/her desire to

chat with other visiting users may be employed. The "describe" script/applet is employed to provide a mechanism for the initiating user to describe the visiting users of interest, as well as himself/herself. In one embodiment, the "describe" script/applet includes pre-selected demographic and other interest characteristics for the user to provide the description through a "selection" process. The "describe" script/applet is also provided to the user as an integral part of providing the responding information page. The "monitor/report" script is employed to monitor and report when a visiting user leaves information site **100** (to allow information site **100** to be able to determine the current visitors). The "monitor/report" script/applet is also provided to the user as an integral part of providing the responding information page. In alternate embodiments, the present invention may be practiced without the use of the "monitor/report" script/applet, using other approaches instead, such as timestamping a user's arrival and coupling the timestamping with automatic expiration of "currency" after a predetermined currency period. Scripts/applets **406** may be implemented using any one of a number of programming languages known in the art, including but not limited to Java, Java Script, and the like. One embodiment each of an example implementation of these scripts/applets will be described later referencing Fig. 5a-5b, 6a-6b, and 7.

Current visitor manager **408** and current visitor list **410** are employed to track current visitors, and information associated with the current visitors. The information includes in particular network addresses of the visiting users' client computers. Current visitor manager **408** creates a record in current visitor list **410** for each new visiting user, and deletes the visitation record when the visiting user leaves information site **100**. Chat session manager **412** is employed to create, on demand, chat sessions **414**, and thereafter, facilitate them until their terminations (including merging if applicable). Chat session manager **412** is also responsible for terminating a chat session **414** after all chat participants have left the chat session. Current visitor manager **408** and chat session manager **412** may be implemented using any one of a number of programming languages known in the art, including but not limited to C, C++, and the like, whereas current visitor list **410** and chat session **414** may be implemented using any one of a number of data structures known in the art.

One embodiment each of an example implementation of current visitor manager **408**, current visitor list **410**, chat session manager **412** and chat sessions **414** will be described later referencing Fig. **8a-8b**, and **9a-9b**.

Referring now to Figs. **5a-5b**, wherein two block diagrams illustrating the operational flow of the "initiate" script/applet, and its associated end-user interface, in accordance with one embodiment, are shown. As illustrated, at **512**, upon receipt at one of client computers **102/104/106**, the "initiate" script/applet (through operating system display services) inserts user selectable icon **502** in the requested information page, and registers with the appropriate operating system services for notification if the icon is selected. At **514**, the "initiate" script/applet awaits user selection. At **516**, in response to a selection notification, the "initiate" script/applet invokes the "describe" script/applet. At **518**, the "initiate" script/applet awaits completion of the description (other visiting users, as well as the initiating user himself/herself). At **520**, in response to a completion indication, the "initiate" script/applet transmits its selection along with the descriptions to information site **100**.

Referring now to Figs. **6a-6b**, wherein two block diagrams illustrating the operational flow of the "describe" script/applet, and its associated end-user interface, in accordance with one embodiment, are shown. As illustrated, at **612**, upon invocation, the "describe" script/applet (through operating system display services) presents "other visiting users" description dialog **602** for the initiating user to describe the other visiting users with whom the initiating user is interested in chatting. As shown, for the illustrated embodiment, "other visiting users" description dialog **602** includes a number of "drop down" lists for the initiating user to specify a number of demographic and interest characteristics. In alternate embodiments, other approaches, e.g. free form, for the initiating user to describe the other visiting users with whom he/she is interested in chatting with may be employed instead.

Upon completion, at **614**, the "describe" script/applet (through operating system display services) presents "initiating user" description dialog **604** for the initiating user to describe how he/she wants himself to be presented to the

other visiting users. As shown, for the illustrated embodiment, "initiating user" description dialog **604** also includes a number of "drop down" lists for the initiating user to specify a number of demographic and interest characteristics. In like manner, in alternate embodiments, other approaches, e.g. free form, for the initiating user to describe himself/herself may be employed instead.

Upon completion, at **616**, the "describe" script/applet returns the descriptions collected to the "initiate" script/applet. In some implementations, the descriptions may be effectively returned by return a pointer to the description data to the "initiate" script/applet.

Referring now to **Figure 7**, wherein a block diagram illustrating the operational flow of the "monitor/report" script/applet, in accordance with one embodiment, is shown. As illustrated, at **712**, upon receipt at one of client computers **102/104/106**, the "monitor/report" script/applet registers with the appropriate operating system services, such that it will be informed about all subsequent information page requests made by client computer **102/104/106**. At **714**, the "monitor/report" script/applet awaits for such notifications. At **716**, upon receipt of one such notification, the "monitor/report" script/applet determines if the request takes the user/client computer to a different information site. If not, the "monitor/report" script/applet takes no action, and returns to **714** to await the next notification, **718**. On the other hand, if the request does take the user/client computer away from information site **100**, the "monitor/report" script/applet reports the departure to current visitor manager **408**, **720**.

Referring now to **Figs 8a-8b**, wherein two block diagrams illustrating the operational flow of current visitor manager **408** and current visitor list **410**, in accordance with one embodiment, are shown. As illustrated, at **812**, upon start-up, current visitor manager **408** registers with the appropriate operating system services, such that it will be informed about all information page requests received by information server **118**. At **814**, current visitor manager **408** awaits for such notifications as well as notifications from the above described "monitor/report" script/applet that certain visiting users have left